

ABSTRACT OF THE DISCLOSURE

A method is disclosed for producing site-specific recombination of DNA in a transgenic non-human mammal at chromosomal regions containing Flp-recognition sites (e.g., a DNA sequence containing an *FRT* site). The invention in particular discloses the use of site-specific recombinases such as Flp recombinase to accomplish *in vivo* recombination at engineered chromosomal FRT sites, thereby forming the basis of a genetic system to mark cell populations and lineages, as well as to activate, delete, mutate, or rearrange genes in vivo. DNA constructs are provided for the creation of Flp and FRT transfected eukaryotic cells or transgenic non-human mammals.